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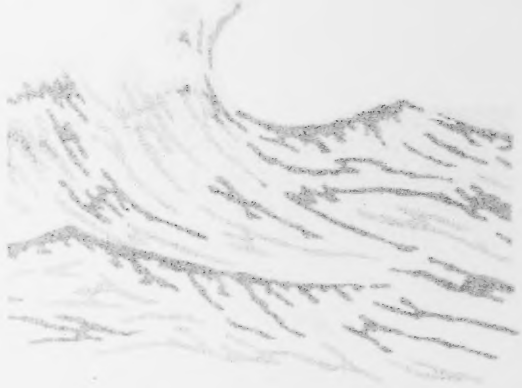
2002 Conservation Requirements for Georges Bank Groundfish Stocks

Report to the Minister of Fisheries and Oceans



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LETTER TO THE MINISTER

May 22, 2002

The Honourable Robert G. Thibault, P.C., M.P.
Minister of Fisheries and Oceans
200 Kent Street
Ottawa, ON K1A 0E6

Dear Minister,

The Fisheries Resource Conservation Council (FRCC) herewith presents to you its report on *2002 Conservation Requirements for Georges Bank Groundfish Stocks.*

The FRCC's primary preoccupation is the need to conclude on an urgent basis a bilateral agreement with the United States which contains an appropriate harvest strategy and an implementation regime for conservation measures for these stocks. Such a strategy would include a mechanism for setting an agreed upon catch level. However, such an agreement would have to be accompanied by significant changes in the U.S.A. approach to managing these stocks, including, and not restricted to, the development of real-time catch monitoring systems, as well as total allowable catch and quota systems, or more closed areas/and or times for increased protection of the 5Zj,m cod stock. Such measures would ensure that the U.S.A. harvest groundfish within the confines of the agreement. Conservation measures employed by Canada alone cannot protect these transboundary groundfish stocks from being overexploited. Benefits will accrue to both the Canadian and U.S.A. industry if an effective conservation strategy can be negotiated between the two countries.

Last year, I wrote that the Council was concerned about the apparent lack of recruitment for 5Zj,m cod. The 1997, 1999 and 2000 year classes appear to be very low. Recruitment has been below the 1978 to 1998 average since 1990. If the recent poor recruitment persists, there is little assurance that the spawning stock biomass will increase, even with no fishing.

Signs for yellowtail flounder and haddock are more positive, and they are currently at levels which have not been seen for many years. The Council's advice reflects these generally positive outlooks for these stocks. The recommended levels of total removals (combined Canada/U.S.A. catches) should allow the continued expansion of the age structure of the yellowtail flounder stock. The total removals (combined Canada/U.S.A. catches) of 5Zj,m haddock, while not as high as advocated by some industry stakeholders, should allow a continued increase in the spawning stock biomass, and maintaining a lower exploitation rate on haddock will reduce cod mortality.

The Council notes that the Canadian fishing industry on Georges Bank has been supportive of conservation measures recently and have all made attempts to protect the cod stock by such measures as using separator panels in trawls, as well as avoiding areas where concentrations of cod occur by all gears and sectors. The Council hopes that these trends will continue.

Sincerely,

Fred Woodman
Chairman

INTRODUCTION

CANADA/U.S. DISCUSSIONS

The fact that the Georges Bank groundfish stocks are transboundary stocks that are 'shared' with the U.S.A. seriously complicates any effective approach to their conservation and management. The FRCC notes that discussions between representatives of Canada and the U.S.A. over the past year have made progress towards the possibility of a future sharing of the groundfish resources in the area. However, the FRCC also notes that progress towards the establishment of a consistent or at least a compatible resource management regime has not yet been accomplished. Indeed, the fact that the U.S.A. cod catch doubled over the past year, reaching almost 1400t in 2001, is cause for significant concern. While the spirit of these bilateral discussions is not questioned by the Council, the U.S.A. has no total allowable catch and quota system nor effective measures that can stop its fishery of 5Zj,m cod when an agreed catch limit has been reached. In addition, unlike Canada, the U.S.A. lacks a real-time catch monitoring system that could be used to trigger a timely area closure on its side of the boundary in 5Zj,m if an agreed catch limit was reached between the two countries. Based on these apparent inadequacies, it is difficult to understand the ability of the U.S.A. to deliver on any conservation and sharing framework that the two parties may be able to negotiate. Conservation measures employed by Canada alone cannot protect the transboundary groundfish stocks from being overexploited. It is the Council's view that the U.S.A. has an obligation to make necessary changes in its management regime that will enable it to negotiate and implement an effective conservation and sharing agreement with Canada. While the difficulties of conserving these transboundary stocks cannot be ignored, neither can the need to conserve and rebuild these important groundfish stocks.

The FRCC recommends that Canada and the U.S.A. negotiate on an urgent basis a bilateral agreement that will contain an appropriate conservation harvest strategy and an effective implementation regime.

CONSERVATION MEASURES

The Council recognizes that management of the mixed fishery for cod and haddock poses special challenges for fisheries managers and industry. In particular, as the total removals of 5Zj,m haddock continue to increase while the total removals of 5Zj,m cod remain at a lower level, these challenges become heightened. There is a real need for industry and DFO to make every reasonable measure to improve the ability of industry to avoid or minimize the catch of cod during a directed haddock fishery.

The FRCC recommends a continuation of the 100% dockside monitoring program for all fleets fishing 5Zc.

It is further recommended that DFO increase the at-sea observer coverage of those fleets with low coverage rates.

In addition to enhanced surveillance and monitoring measures to identify and take corrective action when problems are encountered, it is increasingly necessary for DFO and industry to investigate and implement innovative measures to avoid bycatch problems occurring in the first place. While Canadian fishing fleets have made great strides in reducing cod bycatch in the directed haddock fishery, the increasing disparity between cod and haddock abundance demands that still more be done.

The FRCC recommends the mandatory use of horizontal separator panels on all otter trawls in the directed haddock fishery to reduce catches of cod.

It is also recommended that DFO facilitate, with industry participation, a thorough evaluation of the use of synthetic bait as is used in Iceland and Norway to target hook and line effort towards the catch of haddock, and if successful to encourage its use in this fishery.

It is also recommended that DFO encourage expansion of the information exchange and cooperation that some fishermen are currently employing to avoid cod bycatch in the directed haddock fishery.

The current bycatch management regime includes the use of five sub-areas within 5Zc, any of which can be closed if a bycatch problem occurs in a given area. However, this measure is reactive in that it is a measure to employ if a problem has already occurred. The Council believes that additional measures should be considered proactively to avoid the bycatch problem from occurring in the first place.

The FRCC recommends that DFO Fisheries Management, in consultation with industry, evaluate the effectiveness of adopting seasonal and /or sub-area restrictions for haddock/cod fishing to avoid times when cod bycatch may be at relatively high levels.

Finally, the Council is concerned about the potential of some fishermen misreporting cod or haddock caught in 5Zj,m as being caught in 4X.

The FRCC recommends that in addition to employing effective surveillance measures to monitor fishing effort, that DFO Fisheries Management also implement additional measures to prevent area misreporting from occurring, e.g. use of position tracking devices, etc.

Opening Date

As in the past, industry requested an opening date of June 1st for these fisheries in order to mitigate potential by-catch problems in the mixed haddock and cod fisheries.

The FRCC recommends that the groundfish fishery on Georges Bank be authorized to commence on June 1, 2002, and in the event that plans are not fully in place by this date, that the fishery be opened at least on an interim basis.

Stock Status Reports

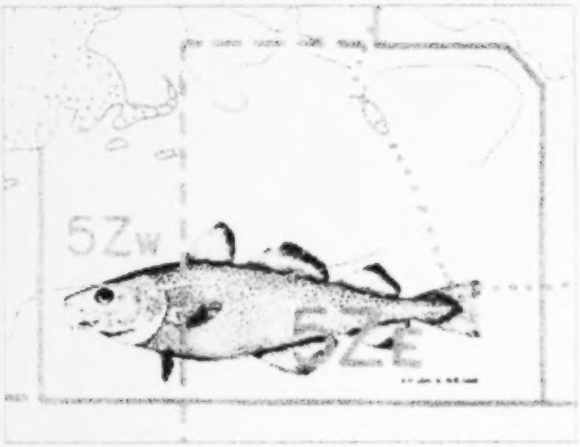
The Council notes that the Stock Status Reports (SSRs) that are produced for Georges Bank groundfish stocks, and for groundfish stocks in other areas, provide projections and an outlook for the coming year. However, the Council finds that having only one year projections seriously impairs its ability to recommend total removal levels that are consistent with a longer-term outlook for the various stocks. While the Council recognizes difficulties associated with providing a long-term outlook that of necessity must incorporate assumptions that may change from year to year, e.g. recruitment and weights-at-age, it is important to the Council's deliberations that at least a medium term outlook is provided along with stated assumptions as appropriate.

The FRCC recommends that the existing Outlook section in SSRs include a 3 year outlook of expected trends in SSB (or age proxy) associated with selected harvest levels, including related uncertainties. In conjunction with this initiative, longer-term reference points should be developed for each of the stocks.

Environmental Overview

SSRs in 2002 report that in recent years (1998-2001) water temperature conditions on Georges Bank generally have been about 1 degree Celsius above normal. This was in contrast to the Scotian Shelf where colder than normal temperatures were observed in 2001. Although recent temperatures are above normal, they are still within the range normally associated with demersal stages of cod and haddock caught within the Georges Bank and Scotian Shelf areas. The degree of mixing as indicated by the annual mean difference in water between 0 and 50m, has remained relatively constant as has been the case for the past 20 years. Both the shelf/slope front and Gulf Stream shifted offshore in 2001 compared to 2000. While the shelf/slope front had moved seaward of its long-term (1971-2000) mean position, the Gulf Stream remained landward of its long-term mean. Although not covering Georges Bank, information from the July Groundfish Surveys (July) and satellite ocean colour data (full year) suggest that chlorophyll levels in surface waters were similar in 2001 to 2000 and similar to the long-term mean. Connections between the oceanographic conditions, and the status of assessed fish stocks within 5Z are still elusive and remain under investigation.

COD - 5ZJ,M



PERSPECTIVE

Fishermen have fished Georges Bank cod since the late 1700s. However, only Canada and the United States of America have had directed fisheries on this stock since 1977. On Georges Bank, cod and haddock are transboundary and are caught together in a mixed groundfish fishery, with cod caught predominantly by longline gear by the Canadian fishery. The U.S.A. fishery is predominantly an otter trawl fishery. However, the catchabilities of cod and haddock differ and they are not necessarily caught in proportion to their relative abundance.

In the post 1977 period, combined USA and Canada catches peaked at 26,000t in 1982 and declined to their lowest level of 1,800t in 1995 when fishing was restricted to by-catch only. Since 1996 total landings have averaged about 3,000t with Canada accounting for more than two-thirds of landings.

Management of the Canadian fishery has included seasonal closures to all gear sectors from January 1 to May 31 since 1994. Vessels >65' operate under enterprise allocations, mobile gear <65' under ITQs, and fixed gear under individual or community quotas. The U.S. fishery has been constrained by specified area ("Area 2") year-round closures since 1995 to protect the haddock stocks, however, the Closed Area 2 closure does not adequately protect the cod stock. Effort controls (Days at Sea, DAS) are also used in the USA.

INTERIM APPROACH TO STOCK CONSERVATION

Until such time as a long-term stock conservation plan has been developed and adopted by Canada and the U.S.A. for this stock, the Council has been making its recommendations based on the following interim approach to stock conservation. While these approaches are still generally intended for this stock, it is understood that environmental and international circumstances may mean that some of them will not be realized in 2002.

- total removals based on exploitation below $F_{0.1}$;
- 25,000t interim rebuilding threshold for spawning stock biomass (ages 3+) to improve the chances of good recruitment;
- an expected annual increase in cod biomass of 5 percent or greater;
- a probability of decline in cod biomass on the order of 20 percent or less;
- ensure that dumping and discarding in the mixed haddock/cod fishery does not occur; and,
- rebuild the age structure so that a higher proportion of older more successful spawners are present in the population.

ANALYSIS

The Stock Status Report states that the adult biomass increased from 8,900t in 1995 to about 21,100t in 2001 but has since decreased to about 17,300t in 2002. Almost all of the increase in the adult biomass between 1995 and 2001 was the result of growth and survival to ages 5+ of the 1992, 1995, and 1996 year classes. A combination of poor recruitment, lower weights-at-age and higher than expected catches were the main causes of the decline in 3+ biomass experienced last year. The USA 5Zj,m reported catches of almost 1400t are nearly twice the 1995 to 2000 average. The combined Canada/USA catches in 2001 of nearly 3500t represent an increase of 57% from 2000 and were the highest catches since 1994.

Consultations on 5Zj,m cod were held in Yarmouth on May 6, 2002. Fishermen generally agree that the stock has been rebuilding since 1995 and has not yet reached the levels experienced in the late 80's. However, they

Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
FRCC Advice 1	-	-	-	-	-	-	-	-	-	-	by-catch	2	3	1.9	2.4	2	2.2
Cdn. TAC	-	11	12.5	12.5	8	-	15	15	15	6	1	2	3	1.9	1.8	1.6	2.1
Cdn. Catch 2	10.4	8.5	11.8	12.7	7.9	14.4	13.4	11.7	8.5	5.3	1.1	1.9	2.9	1.9	1.8	1.6	2.1
U.S Catch	6.7	5.7	4.8	7.6	6.2	6.4	6.8	5.1	4	1.2	0.67	0.77	0.56	0.8	1.2	0.88	1.4
Total	17.1	14.2	16.6	20.3	14.1	20.7	20.2	16.8	12.5	6.5	1.8	2.7	3.6	2.7	3	2.2	3.5

† All catch data are in metric tonnes (t)

1. FRCC Advice - until 1998, the FRCC provided Canadian TAC advice. In 1999, and for subsequent years, the FRCC provided advice on total removals

2. Figures are from the Integrated Fisheries Management Plan Atlantic Groundfish

feel that the 5Zj,m cod stock is in much better condition than the SSR indicates. Also, fishermen report that they continue to catch roughly the same percentage of small, medium, and large cod and they believe that this catch profile means that there is better recruitment than indicated by the RV survey estimates. The industry recommendations on total removals (combined Canada/ USA) range from 1900t to 2,500t. A stakeholder at the meeting suggested that bodies such as ICES and the National Academy of Science of the U.S.A. have conducted studies on the effects of fishing on the environment and the ecosystems and suggested that their results be studied as they may shed some light on the apparent low cod recruitment.

Again this year, the Council is very concerned with the fact that the RV surveys continue to show poor recruitment. The 2002 SSR notes that the 1997, 1999, and 2000 year-classes appear very low. In addition, recruitment has been below the 1978 to 1998 average since 1990. These poor year classes reduce the opportunity to realize growth in the spawning stock biomass in 2002. If the recent poor recruitment persists, there is little assurance that the spawning stock biomass will increase even with no fishing.

The Council believes that a significant reduction in the 3,500t total removals of cod experienced in 2001 must take place. If multi-species and transboundary issues could be set aside, the Council would be inclined to recommend a reduction in total removals to about one-third of the 2001 catch level. However, the Council recognizes that cod bycatch is an inevitable result of prosecuting a directed haddock fishery, particularly by the fixed gear sector. While the current prognosis for cod is poor, and given that there will continue to be a

Sources

DFO Science

SSR A3-04 (2002) Eastern Georges Bank Cod.

FRCC Consultations

The FRCC held a consultation on this stock in:

Yarmouth (May 6, 2002)

Written Briefs

Inshore Fisheries Limited – Claude d'Entremont (2002-010-00068)
Scotia Fundy Mobile Gear Fishermen's Association – Brian Giroux (2002-010-00069)
Scotia Fundy Inshore Fishermen's Association – Evan Waltersn (2002-010-00070)
Fishermen - Martin L. d'Entremont and François d'Entremont (2002-010-00068)

Council's Views on Stock Status

Overall Stock Indicator:	stock declining after a period of rebuilding, poor successive recruitment observations are causes for concern, recent catches too high to rebuild in the short term
Spawning Biomass:	below the 25,000t minimum threshold
Total Biomass:	below long term average
Recruitment:	recovery since 1994 due to moderate year classes in 1992 and 1995; low in recent years
Growth and Condition:	lower weights at age
Age Structure:	landings dominated by 1998 year class at age 3 in 2000, fewer older ages in the catch.
Distribution:	consistent over time
Recent Exploitation Level:	variable near $F_{0.1}$ since 1998.

directed haddock fishery at some level, the Council acknowledges there is a risk of some further reduction in the spawning stock biomass of cod. An interim approach would allow Canadian fishing fleets to make necessary adjustments to better avoid cod bycatch, and to allow Canada and the U.S.A. to consummate an effective joint or cooperative management regime. In support of this interim approach, the Council intends to develop, in cooperation with DFO and industry, a limit reference point (i.e. an unacceptable level) for spawning stock biomass.

The FRCC recommends that the total removals of 5Zj,m cod for the year 2002 be set at the lowest possible level necessary for bycatch in the directed haddock fishery and not to exceed the $F_{0.1}$ level of 1900t (combined Canadian/US total removals).

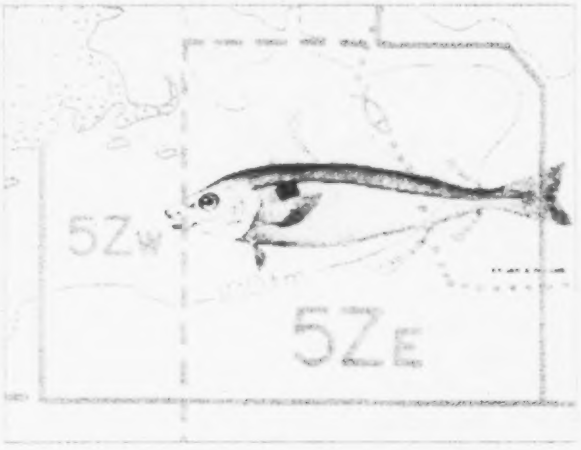
This recommendation provides an opportunity for an increase in the biomass to be realized, with the probability of a biomass decline limited to about 20%.

The longline survey in 5Zc has been in place for six years. DFO Science has considered its use in assessments but its results have had limited use as an index of abundance. DFO Science has also evaluated its results as an indicator of population density within its area of coverage.

The FRCC recommends that DFO Science make clear how the results of this survey may be utilized in the future.

The FRCC also recommends that the results of the longline survey be analyzed to determine whether useful information on haddock/cod catch ratios can be derived.

HADDOCK - 5ZJ,M



PERSPECTIVE

The haddock, a bottom dwelling species in the gadoid family, is found on both sides of the North Atlantic. In the western Atlantic, haddock range from Greenland to Cape Hatteras, with a major concentration on Eastern Georges Bank. On Georges Bank, young haddock grow rapidly at first, reaching over 50 centimeters (20 inches) by age 3, but grow slowly after, reaching about 75 centimeters (30 inches) by age 10. Many haddock mature by age 2 but it is uncertain if these young fish successfully produce viable eggs and larvae.

Georges Bank haddock have supported a commercial fishery since prior to 1900. Bottom trawlers have been the principal gear since their introduction in the 1920's. Landings from Georges Bank, which include the eastern Georges Bank component and the Great South Channel component, averaged about 46,000t between 1935 and 1960 and increased to over 100,000t in the 1960's under heavy exploitation. Subsequently, during the early 1970's, spawning season/area closures were introduced as a means of controlling effort and are still in use today. Following the extension of jurisdiction to 200 miles by coastal states in 1977, only Canada and the USA have fished this stock. Both Canada and the USA impose minimum fish size regulations. On Georges Bank, cod and haddock are transboundary resources and are caught together in a mixed groundfish fishery predominantly by mobile gear.

Since 1994, the fishery has been closed to all sectors from January 1 through May 31. Total Canada/U.S. removals have averaged over 5,000t since 1998, with the Canadian catch being dominant.

INTERIM APPROACH TO STOCK CONSERVATION

Until such time as a long-term stock conservation plan is developed for this stock, the Council has made its recommendations based on the following interim approach for this stock:

- total removals based on exploitation below $F_{0.1}$;
- 40,000t interim rebuilding threshold for spawning stock biomass (ages 3+) to improve the chances of good recruitment;
- expected annual increase in biomass of 5 percent or more;
- probability of decline in biomass in the order of 20 percent or less;
- minimized potential for dumping and discarding in the mixed haddock/cod fishery; and,
- rebuild the age structure so that a higher proportion of older more successful spawners are present in the population.

ANALYSIS

Consultations on 5Zj,m haddock were held in Yarmouth on May 6, 2002. Fishermen's perspective about the status of haddock is compatible with the results of the stock status report. Again this year, stakeholders were pleased with the continued rebuilding of this stock. Industry recommendations for total removals from this stock in 2002 were between 9,500t and 10,700t.

In 2002, the re-building path of the spawning stock biomass was interrupted due primarily to a decline in the weight-at-age values. However, good recruitment from the 1996, 1998, 1999 year classes and particularly the strong 2000 year class, combined with good survivorship, is expected to propel the spawning stock biomass considerably above the 40,000t interim threshold by the beginning of 2003. The 54,000t projected value at an exploitation rate of $F_{0.1}$ approaches the average of the robust period of the 1930s through 1950s.

The exploitation rate for fully recruited ages 4+ has consistently been below $F_{0.1}$ since 1995 and fishing mortality on juveniles has been low. As a result, the age structure of this stock has improved significantly. Almost twice as many age 1 haddock are surviving to

Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
FRCC Advice 1	-	-	-	-	-	-	-	-	-	-	2.5	4.5	3.2	3.9	4	6	7.2
Cdn. TAC	-	-	-	-	8.2	-	5	5	5	3	2.5	4.5	3.2	3.9	3.9	5.4	7
Cdn. Catch 2	3.5	3.4	4.7	4	3	3.3	5.4	4.1	3.7	2.4	2.1	3.7	2.7	3.4	3.7	5.4	6.7
U.S Catch	1.7	2.2	1.4	1.7	0.79	1.2	0.95	1.8	0.42	0.29	0.06	0.08	0.11	0.32	0.35	0.2	0.6
Total	5.2	5.6	6.1	5.7	3.8	4.5	6.4	5.7	4.1	2.7	2.1	3.7	2.8	3.7	4	5.6	7.3

* All catch data are in metric tonnes (t)

1. FRCC Advice - until 1998, the FRCC provided Canadian TAC advice. In 1999, and for subsequent years, the FRCC provided advice on total removals

2. Figures are from the Integrated Fisheries Management Plan Atlantic Groundfish

surviving to reach age 8, than was the case in the 1970s.

The environment for haddock on George's Bank is also considered to be positive where water temperatures have generally been about 1 degree above normal. Vertical mixing of the water column has remained relatively constant over the past twenty years as have chlorophyll levels.

The Council recognizes that improvements in the health of this stock are in part a result of the conservation measures adopted by the Department and industry in recent years, and encourages a continuation of these initiatives. There are relatively few vessels active in what is a highly controlled Canadian fishery in this area; discarding and misreporting is considered to be negligible. However, continued vigilance is required, particularly with respect to at-sea observer coverage rates for some fleets. Further comments and recommendations regarding conservation measures have been provided in the Introduction section to this Report.

In 2001, the Minister established a Canadian Quota in the context of a fishing mortality rate of 80% of $F_{0.1}$. While the 2002 assessment provides a note of caution concerning the 2002 weight-at-age values and indications that the 2001 year-class is weak, these single-year values should be evaluated in the context of the suite of positive signals on this stock. The FRCC observes that adopting this same, conservative fishing mortality rate in 2002 should result in continued re-building of this stock over at least the medium term. With total removals at this level, there appears to be a greater than 90% probability that the exploitation rate will remain below $F_{0.1}$ and there appears to be an equally high probability

Sources

DFO Science

SSR A3-06 (2002) Haddock on Georges Bank.

FRCC Consultations

The FRCC held a consultation on this stock in:

Yarmouth (May 6, 2002)

Written Briefs

Inshore Fisheries Limited – Claude d'Entremont (2002-010-00068)
Scotia Fundy Mobile Gear Fishermen's Association – Brian Giroux (2002-010-00069)
Scotia Fundy Inshore Fishermen's Association – Evan Waltersn (2002-010-00070)
Fishermen - Martin L. d'Entremont and François d'Entremont (2002-010-00068)

Council's Views on Stock Status

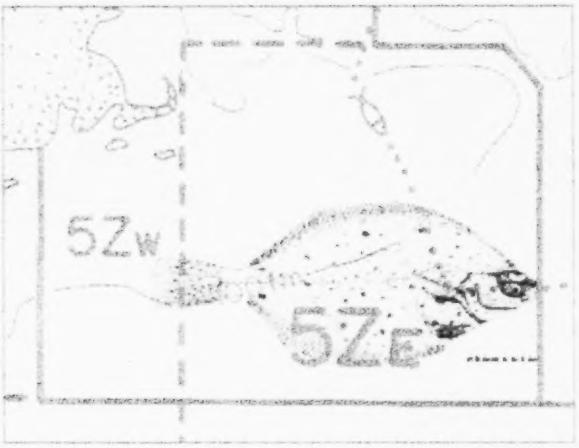
Overall Stock Indicator:	rebuilding toward long-term population levels;
Spawning Biomass:	near the 40,000t interim threshold;
Total Biomass:	increasing since 1993, currently about two-thirds of the average level of the 1930-50s;
Recruitment:	the 1998 year-class is strong, the 1999 year-class is moderate; the 2000 year-class appears to be very strong; the 2001 year class appears to be weak.
Growth and Condition:	no persistent trends, but weight-at-age is lower in 2002; age 1 survivorship is generally higher than observed during the 1980's;
Age Structure:	age structure continuing to broaden;
Distribution:	similar to recent past;
Recent Exploitation Level:	below $F_{0.1}$ since 1995

that the biomass would increase by 10-20% over the coming year.

Some industry representatives believe that this stock has reached the point when the fishing mortality rate could be increased to the level of $F_{0.1}$. However, the Council does not recommend this approach for 2002 because the strong 2000 year-class has neither entered the fishery nor the spawning stock biomass, the situation is not yet clear on whether any new trend may be associated with the weak 2001 year-class, and because 2002 may be a transition year with respect to understanding practical limits of the changing haddock/cod ratio in what is a mixed fishery for some fleets. Moreover, maintaining a lower exploitation on haddock will reduce the mortality on cod.

The FRCC recommends that the total removals for 2002 for 5Zj,m haddock be increased to 8,500t (combined Canadian /US total removals).

YELLOWTAIL FLOUNDER - 5ZJ,MHN



PERSPECTIVE

Yellowtail flounder populations range from Labrador to Chesapeake Bay and are considered relatively sedentary. A major concentration of yellowtail flounder occurs on Georges Bank to the east of the Great South Channel. While tagging work indicates limited movement from Georges Bank to adjacent areas, knowledge of seasonal movement of yellowtail flounder on Georges Bank is poor. The stock is estimated to be distributed equally on either side of the Hague Line. On Georges Bank, spawning occurs during the late spring period peaking in May. It appears that spawning occurs on both sides of the international boundary.Yellowtail flounder appear to have variable maturity schedules, with age two females considered 40% mature during periods of high stock biomass to 90% mature during periods of low stock biomass.Total catches of Georges Bank yellowtail flounder reached almost 20,000t in the late 1960s. The Canadian directed fishery for yellowtail flounder is a relatively recent development, with significant catches first occurring after the introduction of specialized gear in 1993. In 1994, with about 40 vessels pursuing the Canadian fishery there was a catch of 2,142t. Under quota control for the first time in 1995, Canadian catches were 495t against a quota of 400t. The combined Canada-USA total removals have been increasing since 1995, and in 2001 were 6,790t slightly below 2000. The Canadian catch was 2938t in 2001 with a 3450t TAC for Canada.

The Canadian fishery is mainly pursued using otter trawl gear from vessels less than 65'. The Canadian fishery occurs in a relatively limited portion of Georges Bank known as the Yellowtail Hole (5Zm), and with current management restrictions, operates in the latter half of the calendar year only (June to December). The United States fishery operates primarily in the south-west triangle outside of closed Area II. US catches concentrated in this were 4,036t in 2000 and 3900t in 2001. There are indications of a shift in biomass to the west of the Hague line in 2001. Both Canada and USA employ the same management unit and share jointly in the assessment of the stock.

INTERIM APPROACH TO STOCK CONSERVATION

Until such time as the long term conservation plan is developed for this stock, the Council has made its recommendations based on the following interim approach for this stock:

- total removals based on exploitation below $F_{0.1}$;
- an expected increase in spawning stock biomass of 5% or more;
- a probability of decline in biomass on the order of 20% or less; and,
- an expansion of the age structure into the older ages of the population.

ANALYSIS

In 2001, the exploitation rate on fully recruited biomass was 9%, well below the $F_{0.1}$ level. In 2001, the spawning stock biomass has dramatically increased due to the large 1997 and 1998 year classes. The outlook for yellowtail flounder on Georges Bank remains positive and the population is responding well to the low exploitation regimes and high productivity.

Mobile gear fishermen reported that while the range was increasing, catch rates in the Yellowtail Hole have declined significantly in 2000 and again in 2001. Skate also continue in higher abundance in this area which interferes with directed fishing. There is concern over the potential for localized resource depletion in the Yellowtail Hole. Industry advice for total removals ranged from status quo of 6000t to the $F_{0.1}$ rate of 10,300 t.

The FRCC shares the concern about the potential for localized resource depletion, particularly since yellowtail is a relatively sedentary species.

Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
FRCC Advice 1	-	-	-	-	-	-	-	-	-	-	0.4	0.4	0.8	1.2	4	6	6
Cdn. TAC	-	-	-	-	-	-	-	-	-	-	0.4	0.4	0.8	1.2	2	3	3.4
Cdn. Catch 2	0	0	0	0	0	0	0	0	0.7	2.2	0.5	0.48	0.81	1.2	1.9	2.9	2.9
U.S Catch	2.5	3.1	2.9	2.1	1.2	3.6	2	4.7	3.2	1.7	0.31	0.8	1	1.9	2.5	4	3.9
Total	2.5	3.1	2.9	2.1	1.2	3.6	2	4.7	3.9	3.9	0.8	1.3	1.8	3.1	4.4	6.9	6.8

* All catch data are in metric tonnes (t)

1. FRCC Advice - until 1998, the FRCC provided Canadian TAC advice. In 1999, and for subsequent years, the FRCC provided advice on total removals

2. Figures are from the Integrated Fisheries Management Plan Atlantic Groundfish

The FRCC recommends that DFO evaluate whether localized resource depletion is occuring.

Should localized resource depletion be occuring, the FRCC recommends that industry and DFO jointly consider measures to more broadly distribute fishing effort to avoid possible localized depletion in this area in the future.

Recent recruitment is strong relative to the 1980's and the 1998 year class dominated the fishery in 2001. The 1997 year class is expected to remain strong and contribute to the fishery in the future. It is questionable whether the phenomenal rate of increase observed in this stock will continue at the same rate in the future.

In 2001, the Minister established a Canadian quota in the context of a fishing mortality rate of 75% of $F_{0.1}$. While there are some concerns with this stock, following this approach in 2002 appears to pose minimal risks due to the healthy stock condition. This exploitation rate should provide for continued stock rebuilding. It also allows for an improvement in the truncated but improving age structure for older fish. It also acknowledges other uncertainties in the assessment related to aging data, partial recruitment and mortality as well as declining catch rates in certain areas.

The FRCC recommends the total removals for 5Zj,mnh yellowtail flounder in 2002 be increased to 7700t (combined Canadian/US total removals).

The FRCC notes that aging data required for this stock assessment comes from USA age length key sources. This underlies a lack of aging information and concern about fewer old age groups in the population. Continued low levels of sampling and absence of age information compromises the reliability of the assessment results. The Council acknowledges ongoing efforts by DFO Science to reconcile otilith and scale aging data

SOURCES

DFO Science

SSR A3 – 15 (2002) Yellowtail Flounder on Georges Bank.

FRCC CONSULTATIONS

The FRCC held a consultation on this stock in:

Yarmouth (May 6, 2002)

WRITTEN BRIEFS

Inshore Fisheries Limited – Claude d'Entremont (2002-010-00068)
Scotia Fundy Mobile Gear Fishermen's Association – Brian Giroux (2002-010-00069)
Scotia Fundy Inshore Fishermen's Association – Evan Waltersn (2002-010-00070)
Fishermen - Martin L. d'Entremont and François d'Entremont (2002-010-00068)

Council's Views on Stock Status

Overall stock indicator:	Healthy
Spawning Biomass:	Continues to increase.
Total Biomass:	Continues to increase.
Recruitment:	Moderate to strong year classes since 1995. Very strong in1997 and 1998.
Growth and condition	Increasing trend since 1996.
Age Structure	Improving but dominated by fish less than age 5.
Distribution	Expanding according RV survey results.
Recent Exploitation level	Below $F_{0.1}$

from US and Canadian sources and encourages completion of this exercise.

The FRCC recommends that yellowtail flounder aging data work be continued and completed to improve the reliability of stock assessment results.

Despite indications that most scallop catches do not occur on the traditional yellowtail grounds (e.g. Yellowtail Hole) and that there is a trend for scallopers to fish more on the Northeast portion of the bank, yellowtail bycatch in the scallop fishery continues to be an unresolved issue for the groundfish sector. In order to better define this issue, the Council feels any pertinent information should be considered, including the results of the industry based monitoring program.

The FRCC recommends once again that the observer reports on yellowtail flounder bycatches in the directed scallop fishery be analyzed and incorporated in the next assessment.

Appendix 1: FRCC Mandate and Membership

FRCC Terms of Reference

1. Introduction

The Government of Canada is committed to a more comprehensive approach to the conservation and management of our fisheries resource. This approach demands a better understanding of complex fisheries ecosystems - the interaction of fish with other species, predator-prey relationships, and also changes in the marine environment like ocean currents, water temperatures and salinity.

The Government of Canada is also committed to a more effective role in decision-making for those with practical experience and knowledge in the fishery.

The Minister of Fisheries and Oceans has established the Fisheries Resource Conservation Council (FRCC) as a partnership between government, the scientific community and the direct stakeholders in the fishery. Its mission is to contribute to the management of the Atlantic fisheries on a 'sustainable' basis by ensuring that stock assessments are conducted in a multi-disciplined and integrated fashion and that appropriate methodologies and approaches are employed; by reviewing these assessments together with other relevant information and recommending to the Minister total allowable catches (TACs) and other conservation measures, including some idea of the level of risk and uncertainty associated with these recommendations; and by advising on the appropriate priorities for science.

2. Definition of Conservation

Fisheries conservation is that aspect of the management of the fisheries resource which ensures that its use is sustainable and which safeguards its ecological processes and genetic diversity for the maintenance of the resource. Fisheries conservation ensures that the fullest sustainable advantage is derived from the resource and that the resource base is maintained.

3. Council Objectives

3.1 To help the government achieve its conservation, economic and social objectives for the fishery.The conservation objectives include, but are not restricted to:

3.1.1 rebuilding stocks to their 'optimum' levels and thereafter maintaining them at or near these levels, subject to natural fluctuations, and with 'sufficient' spawning biomass to allow a continuing strong production of young fish; and,

3.1.2 managing the pattern of fishing over the sizes and ages present in fish stocks and catching fish of optimal size.

3.2 To develop a more profound understanding of fish-producing ecosystems including the inter-relationships between species and the effects of changes in the marine environment on stocks.

3.3 To review scientific research, resource assessments and conservation proposals, including, where appropriate, through a process of public hearings.

3.4 To ensure that the operational and economic realities of the fishery, in addition to scientific stock assessments, are taken into account in recommending measures to achieve the conservation objectives.

3.5 To better integrate scientific expertise with the knowledge and experience of all sectors of the industry and thus develop a strong working partnership.

3.6 To provide a mechanism for public and industry advice and review of stock assessment information.

3.7 To make public recommendations to the Minister.

4. Mandate and Scope

4.1 The Fisheries Resource Conservation Council will address these objectives by bringing together industry, DFO science and fisheries management, and external scientific and economic expertise in one body.

4.2 The Council will:

4.2.1 advise the Minister on research and assessment priorities;

4.2.2 review DFO data and advise on methodologies;

4.2.3 consider conservation measures that may be required to protect fish stocks;

4.2.4 review stock assessment information and conservation proposals, including through public hearings, where appropriate; and,

4.2.5 make written public recommendations to the Minister on TACs and other conservation measures.

4.3 The Council may recommend any measures considered necessary and appropriate for conservation purposes such as TACs, closure of areas to fishing during specific periods, approaches to avoid catching sub-optimal sized fish or unwanted species, and restrictions on the characteristics or use of fishing gears.

4.4 The Council's scope includes Canadian fish stocks of the Atlantic and Eastern Arctic Oceans. In the first instance, the Council will address groundfish, and then subsequently take on responsibility for pelagic and shellfish species.

4.5 The Council may also advise the Minister on the position to be taken by Canada with respect to straddling and transboundary stocks under the jurisdiction of international bodies such as the Northwest Atlantic Fisheries Organization (NAFO).

5. Size, Structure and Make-Up

5.1 The Council will consist of not more than 14 members with an appropriate balance between 'science' and 'industry'.

5.2 Members are chosen on merit and standing in the community, and not as representatives of organizations, areas or interests.

5.3 'Science' members, are drawn from government departments, universities or international posts, and are of an appropriate mix of disciplines, including fisheries management and economics.

5.4 'Industry' members are knowledgeable of fishing and the fishing industry and understand the operational and economic impacts of conservation decisions.

5.5 All members of the Council are appointed by the Minister.

5.6 All members, including the Chairperson, are appointed for a three year term; terms can be renewed.

5.7 Members appointed from DFO serve 'ex officio'.

5.8 Members have to disclose any interest in the Atlantic or Eastern Arctic fishery and take appropriate measures so as to avoid potential or real conflict of interest situations during the term of appointment.

5.9 The four Atlantic Provinces, Quebec and Nunavut may each nominate one delegate to the Council. These delegates have access to the Council's information, and may participate fully in meetings, but will not be asked to officially endorse the formal recommendations to the Minister.

5.10 The Council is supported by a small Secretariat, to be located in Ottawa. The Secretariat will:

5.10.1 provide administrative support for the functioning of the Council;

5.10.2 provide a technical science and fisheries management support;

5.10.3 organize Council meetings;

5.10.4 record decisions of the Council;

5.10.5 undertake a professional communications function for the Council, providing a central point for communications to and from the Council; and

5.10.6 undertake such other matters as from time to time might be appropriate.

5.11 The Chairman may appoint an Executive Committee, consisting of the Chairman, Vice-Chairman, and three other Members.

5.12 In addition, the Chairman may, from time to time, strike an 'ad hoc' committee to deal with a specific issue.

6. ACTIVITIES:

6.1 Reviews appropriate DFO science research programs and recommends priorities, objectives and resource requirements.

6.2 Considers scientific information - including biology, and physical and chemical oceanography, taking into account fisheries management, fishing practices, economics and enforcement information.

6.3 Conducts public hearings wherein scientific information is presented and/or proposed conservation measures/options are reviewed and discussed.

6.4 Recommends TACs and other conservation measures.

6.5 Prepares a comprehensive, long-term plan and a work plan for the Council which are reviewed annually at a workshop with international scientists and appropriate industry representatives.

6.6 Ensures an open and effective exchange of information with the fishing industry and contributes to a better public understanding of the conservation and management of Canada's fisheries resource.

FRCC MEMBERSHIP:

Members:

Fred Woodman, Chairman
Jean Guy d'Entremont, Vice-Chair
Maurice Beaudin
Bill Broderick
Bruce Chapman
Nick Henneberry
Douglas Johnston
Dan Lane
Jean-Jacques Maguire
Paul Nadeau
John Pope
George Rose
Karl Sullivan

Provincial Delegates:

Carey Bonnell, Nunavut
Mario Gaudet, New Brunswick
David MacEwen, Prince Edward Island
Dario Lemelin, Québec
Tom Dooley, Newfoundland and Labrador
Clary Reardon, Nova Scotia

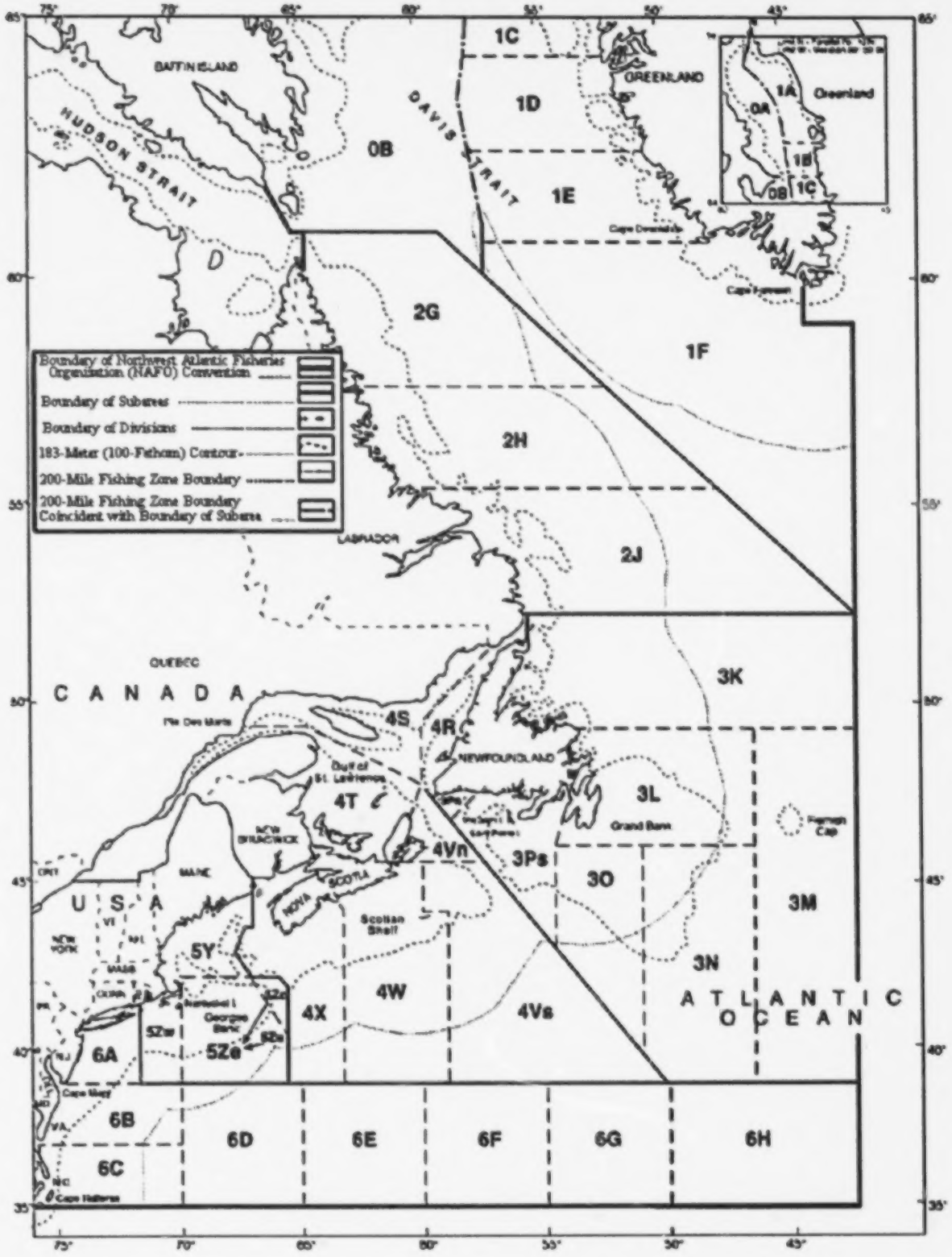
Ex Officio:

Gilles Belzile
Barry Rashotte
David Gillis

Secretariat:

Michel G. Vermette, Executive Director
Tracey Sheehan
Helena DaCosta
Debra Côté

200 Mile Fishing Zone and NAFO Fishing Boundaries



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